Saving Lives

Traffic Safety Information Systems
A Perspective from Abroad

Traffic Safety Information Systems
International Scan
Conducted October 2003
Sponsored by AASHTO & FHWA

TSIS International Scan
Agenda for Presentations

- ◆ **Background and Key Findings**

- ◆ **Recommendations and Implementation**

- ◆ **DMV Perspectives on Safety Information**

- ◆ **The "Food" for Safety Analysis Tools**

Background and Key Findings – My Agenda

◆ **United States Highway Safety Challenge**

◆ **Scan Tour**
  - **Objectives & Topics of Interest**
  - **Team Members**
  - **Host Countries**

◆ **Critical Findings**
  - **Safety as Organizational Driver**
  - **Information Sharing**
  - **Tools for Efficiency, Accuracy, Timeliness, Analysis Support**

Plateau in Motor Vehicle Fatality Trends in U.S.
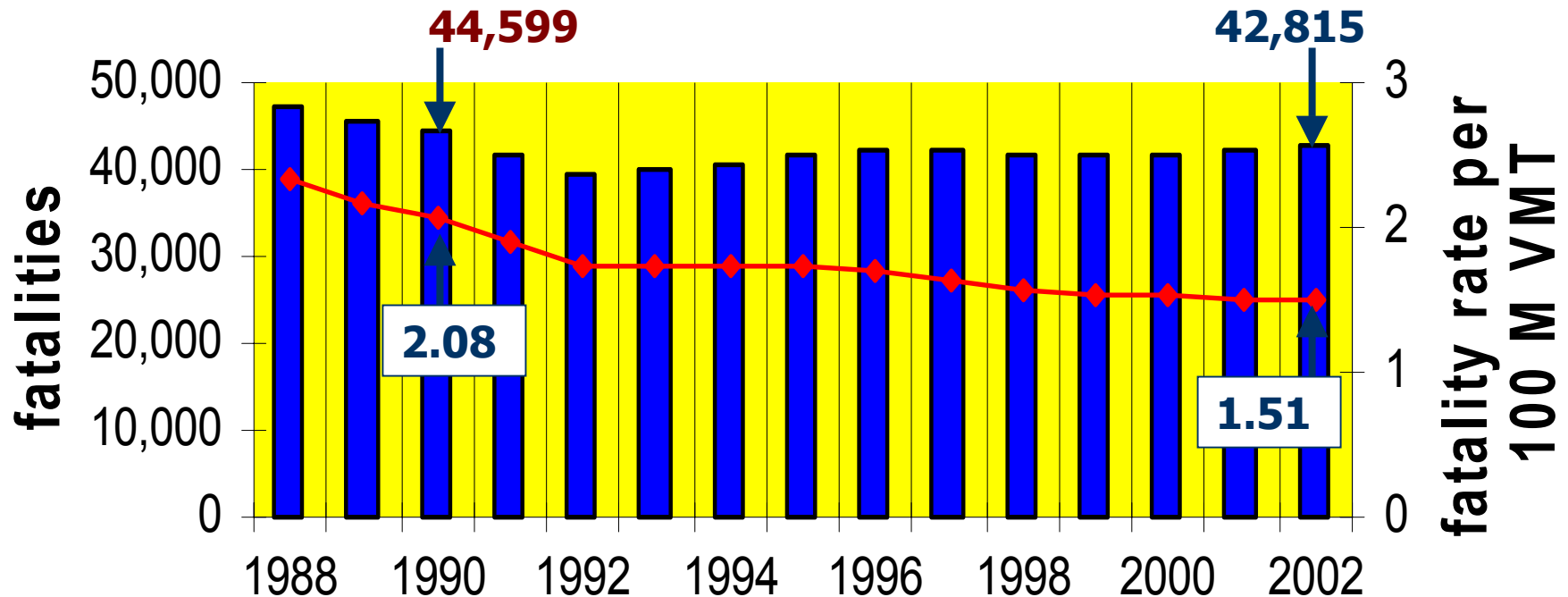
The Challenge for 2008
1.0 Fatalities / 100M Veh-Miles-Traveled
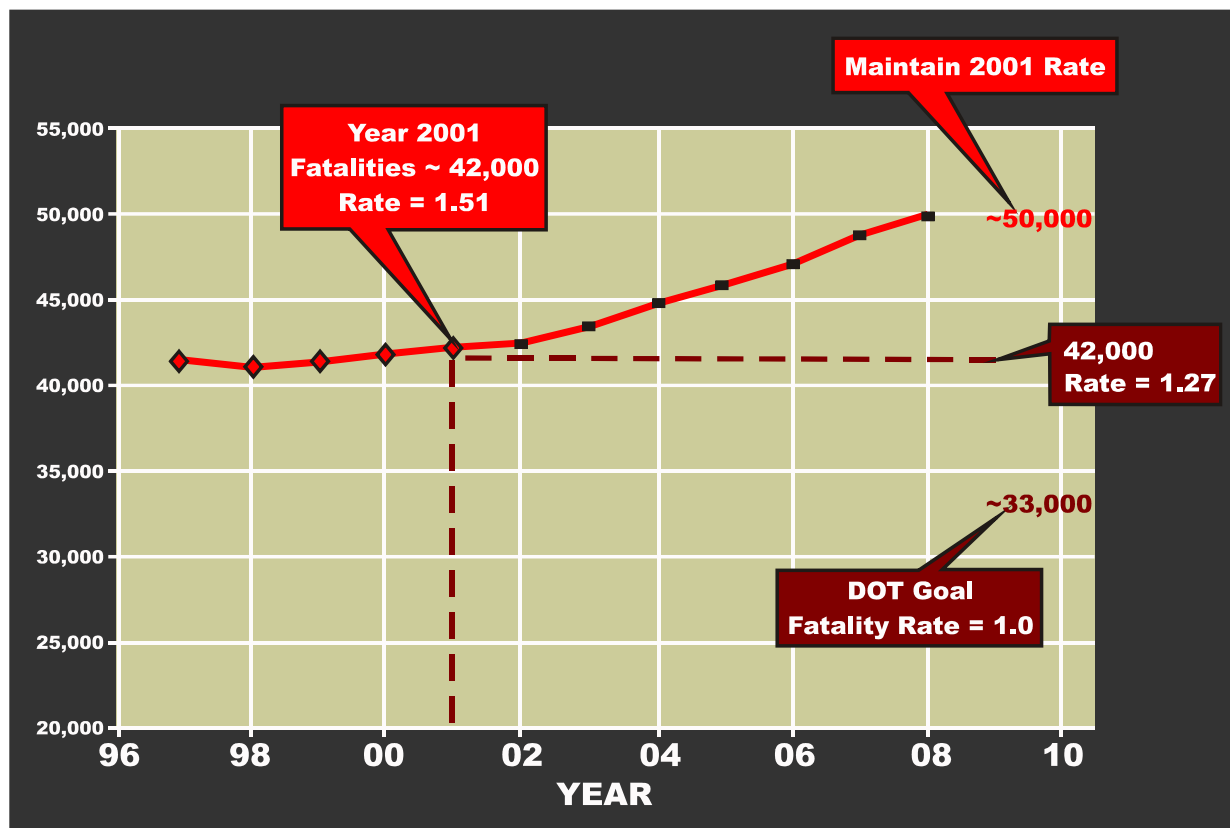
Comprehensive View of Highway Safety – Objectives & Topics of Interest

- <u>General</u>: Policy, Data Systems & Linkages, Analysis and Reporting

- <u>Crash Data</u>: Collection and Accessibility of Routine & Special Traffic Crash Data

- <u>Roadway Data</u>: Travel Lanes, Appurtenances, Traffic Control Devices, Structures, Travel Volumes, Horizontal & Vertical Alignment, etc.

- <u>Driver Data</u>: Demographics, Training, etc.

- <u>Enforcement Data</u>: Routine, Special Purpose, etc.

- <u>Other</u>: Medical, Adjudication

Scan Team

Jim Ellison
Pierce Co., WA
Traffic Egr.

Mike Crow
KS State DOT,
Traffic Egr.

David Harkey
UNC – Hwy.
Safety Research

Don McNamara
USDOT –
NHTSA Reg. 5

Mike Griffith
USDOT – FHWA
Safety R&D

Scott MacGregor
CA State Hwy
Patrol

Mike Halladay
USDOT – FHWA
Office of Safety

Susan Martinovich
NV State DOT, Dep.
Director

Kevin Lacy
NC State DOT,
Traffic Egr.

Barb DeLucia
TX: Data Nexus,
Reporter

Betty Serian
PA State DOT,
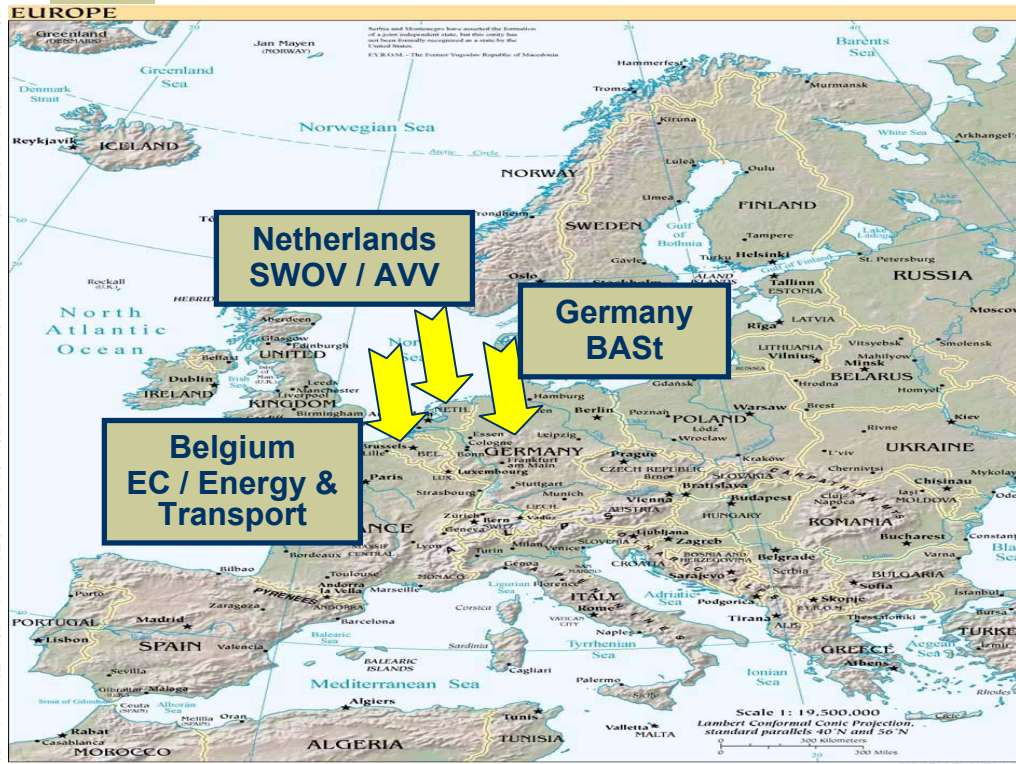DMV Administrator

Herbert; Translator
in Germany

Jake Almborg
Scan Facilitator &
Cattle Dog

Who Did We Visit?

Netherlands
SWOV / AVV

Germany
BASt

Belgium
EC / Energy &
Transport

New South Wales, AUS
Road & Transp. Auth.

Victoria, AUS
VicRoads /
ARRB Transport
Research

This is ….Basic Information
with appreciation to Peter Mak, AVV, The Netherlands

As seen/ heard yesterday from various speakers these are important stepping stones :

• *Bricks*

- Flexible and accessible databases that are *s*table, consistent, unified, harmonised and up-to-date in time & content.
- Knowing "who's the 'customer'"(needs and wants)

• *Cement*

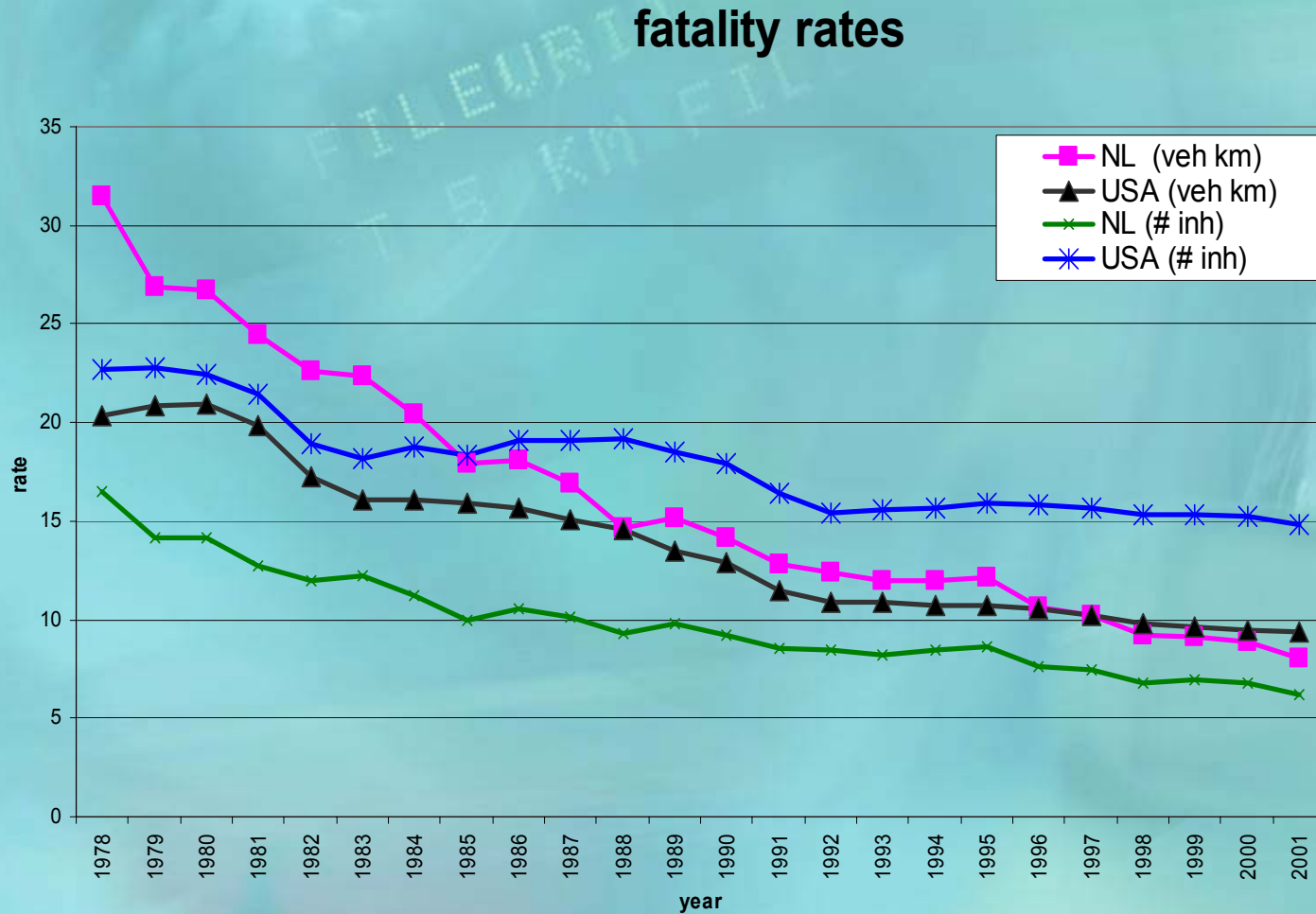Knowledge : traffic, transport, safety
Expertise: GIS, RDBMS-SQL's

This is ….Basic Information

Important issues also :

-Data sets have to be "joinable" using one single unique key (the NIN)

-Data sets and results must be available to a broad public

-Processes must be flexible and adaptable

-Other Authorities/Institutes/Companies have access via Internet

-Meta-information on Quality-aspects is of major importance

-Researchers use BI but there output (often) is BI as well

-Careful maintenance of the data means matching needs and wants in a cost effective and efficient way.

Comparison USA / The Netherlands

fatality rates

Legend:
- NL (veh km)
- USA (veh km)
- NL (# inh)
- USA (# inh)

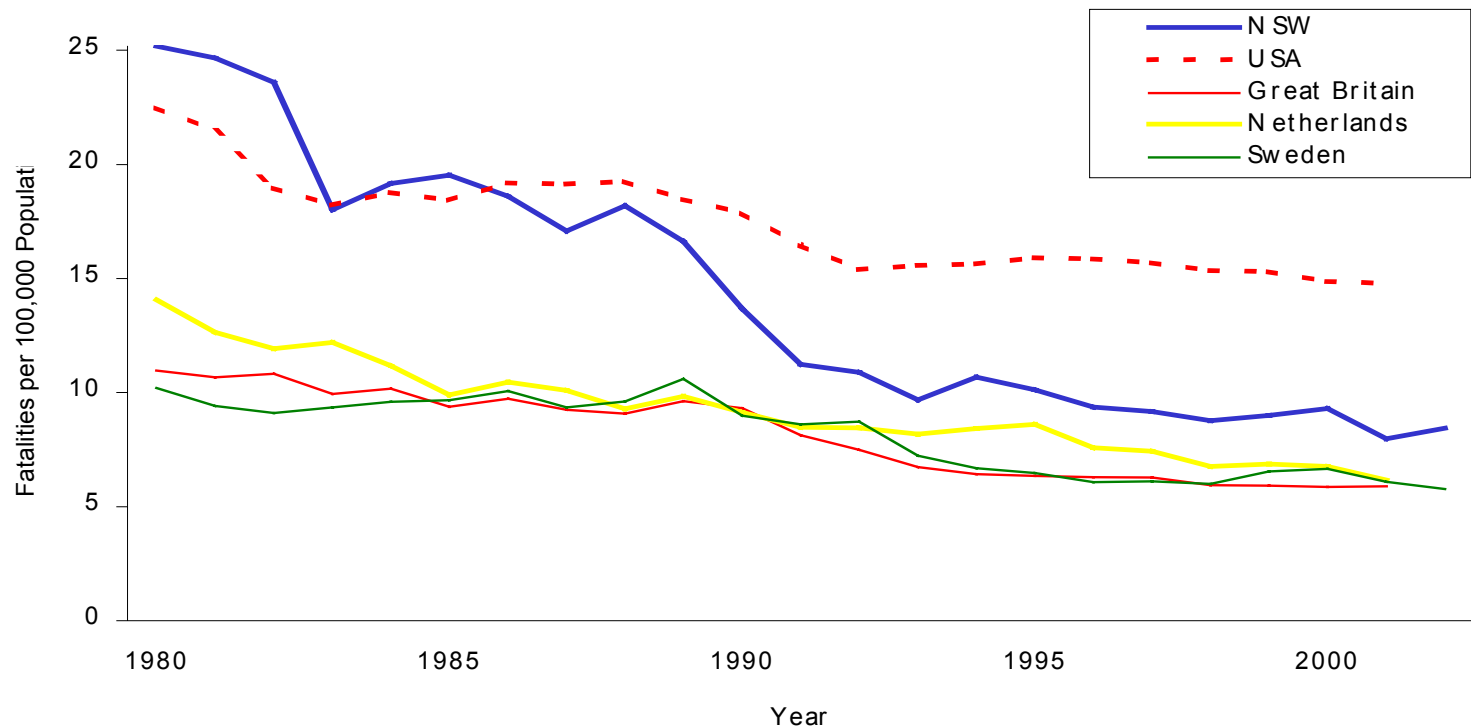x-axis: year (1978–2001)
y-axis: rate (0–35)

International Benchmarking

Over the last two decades NSW has been a star performer Current rates are approaching those for the world's best performers

T rends In Fatality Rates per 100,000 Population, NSW v Selected Countries, 1980 to 2002 (or most recent)
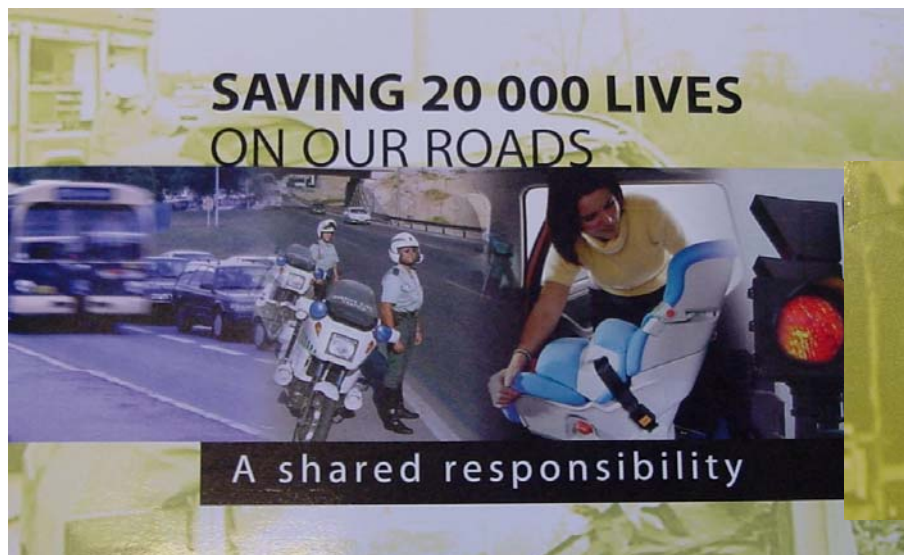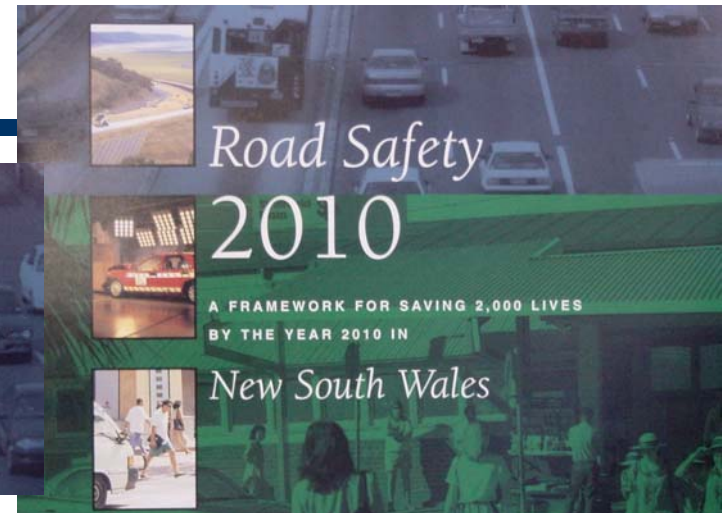
Highway Safety Goals

**U.S. Common Goal of
1.0 Fatalities / 100M-VMT by 2008**

- **European Action Plan:**
  Reduce fatalities and injuries by 50% by 2012
- **New South Wales, Australia**
  Reduce fatalities and injuries by 40% by 2010
- **Victoria, Australia**
  Reduce fatalities and injuries by 20% by 2007

Highway Safety Goals

Safety as a Core Business Function

Victoria's Road Safety Structure

- GOVERNMENT — Ministers for Roads, Transport, Police and TAC
- Parliamentary Road Safety Committee
- Road Safety Executive Group
- National Issues
- Road Safety Reference Group
- Road Safety Management Group
- Traffic Safety Education Group
- Safety Councils
- TRANSPORT ACCIDENT COMMISSION
- VICROADS
- VICTORIA POLICE
- Secretariat by VicRoads

Communication / Sharing

- Web-based Applications for data access by the public

- "Data-for-Data" Partnerships: Official agreements among Federal & Local agencies to share data

- Service Center open 24/7 to obtain statistical crash data and technical assistance

- Training Programs and Software Sharing

- Safety Publications, Billboards, and Marketing
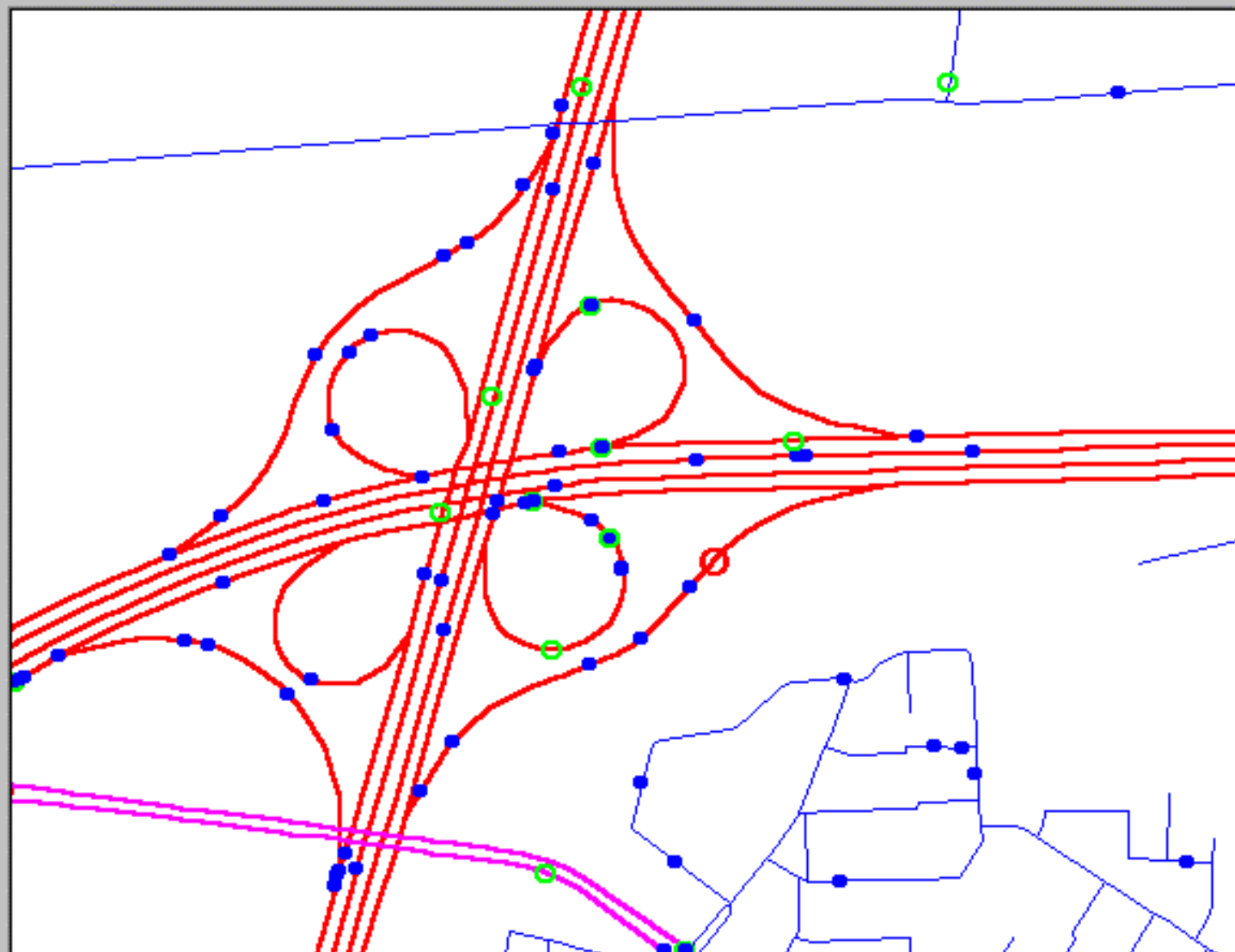
(1) Processing raw materials into products

changes in the road network

road network database

other applications

once a month

road accident

troad acc. database

once a month

output database

www.rws-avv.nl

products

Rijkswaterstaat
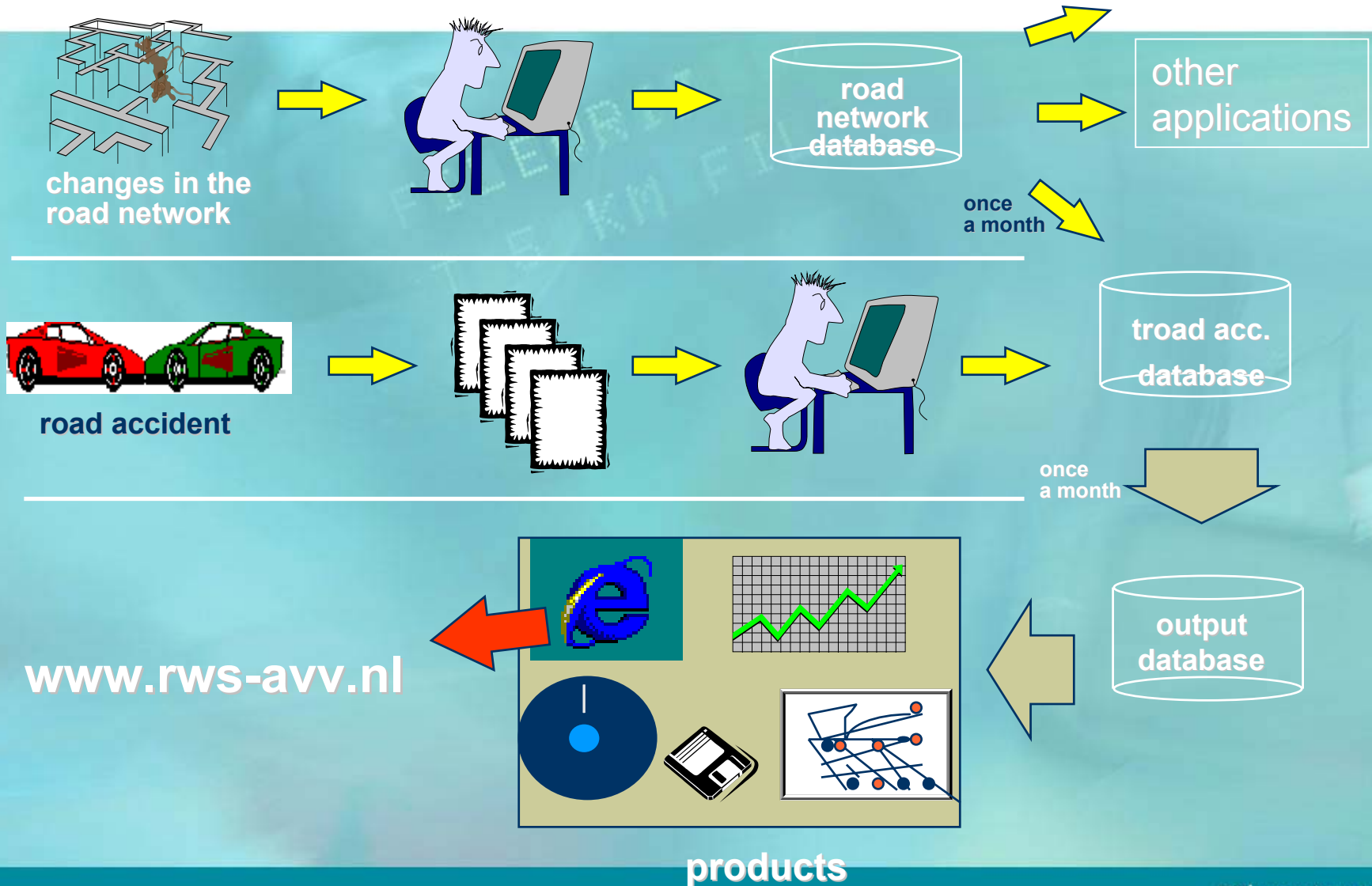
Publications & Call Center
Victoria, AUS / The Netherlands
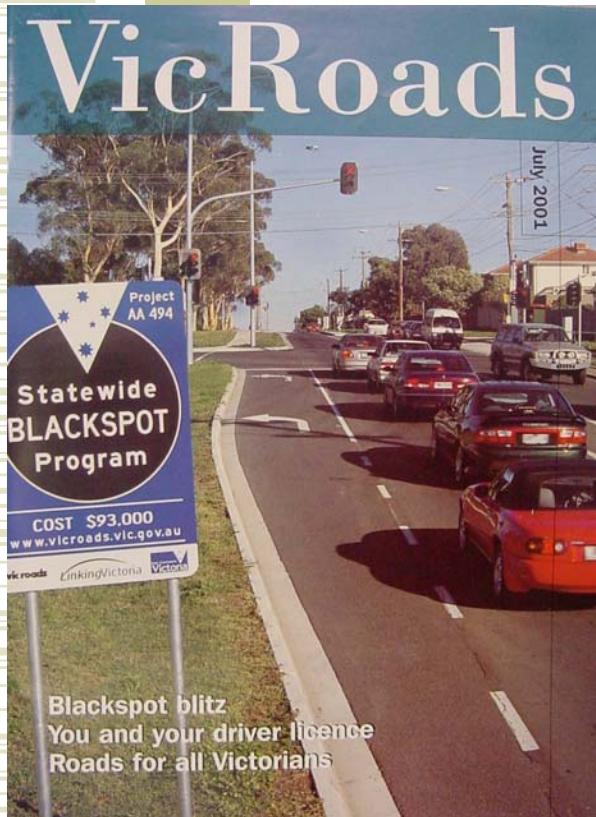
Do keep distance

Market for monitoring Distance Keeping
- Directorate General of Passenger Transport
- Media campaign (5 year period)
- Monitoring effect of the campaign

www.2seconden.nl

Houd 2 seconden afstand

www.2seconden.nl

Houd 2 seconden afstand

Creative Strategies & Tools

- ◆ New Data Capture Technologies
- ◆ Data Entry & Use – Comprehensive Approach to Efficiency & Accuracy
  - ■ At Crash Scene
  - ■ Entry into Database Systems
  - ■ Data Estimation
  - ■ Database Linkages
- ◆ New Uses of Existing Technologies

New Data Capture Technologies

- ◆ **Traffic Loop data for Tailgating Information**

- ◆ **Cameras for Monitoring Heavy Vehicles**

- ◆ **Cameras to Ticket Drivers for Speeding**

- ◆ **Cameras for Running Red Light Signals**

- ◆ **Variable Message and Speed Limit Signs**

Data Collection

(2) New Dutch Police Policy plan

- Back to core business
- Less administrative work
- "More blue in our streets"
- More citizens responsibility
- 2% cut back

=> The police intended to stop reporting road accidents!

Rijkswaterstaat

(3) New proposition for a road accident reporting system, adjusted to the police

- ◆ Easy reporting and a higher reporting speed
- ◆ Accident data supply to AVV should be possible in several ways
- ◆ Hardly any administrative activities
- ◆ Low training costs, thanks to simplicity of the system
- ◆ No technical adjustments within the police organisation
- ◆ Enriched data
- ◆ Quality control

Accident data and monitoring

fatalities
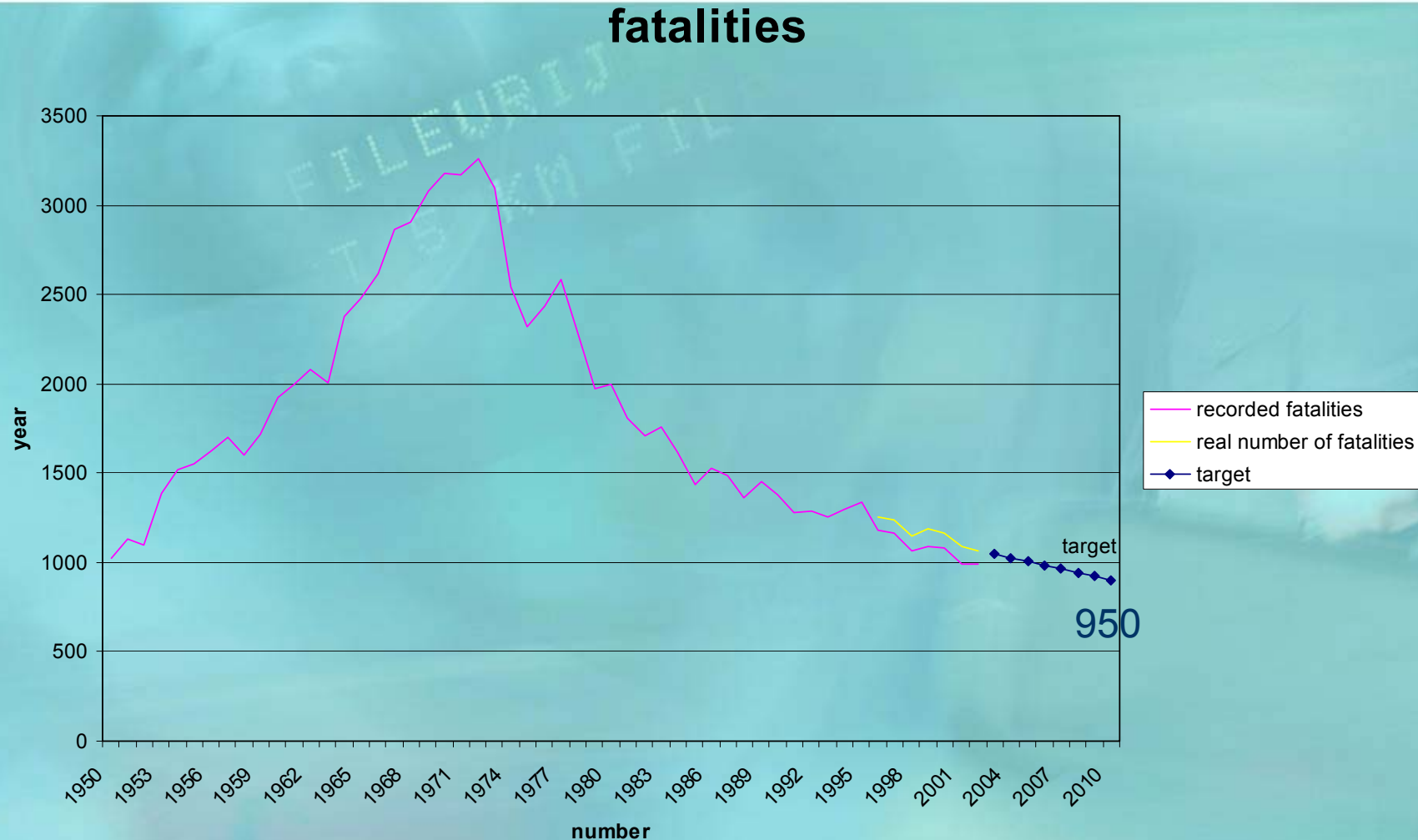
(3) Estimated real amount of road accident casualties (2001)

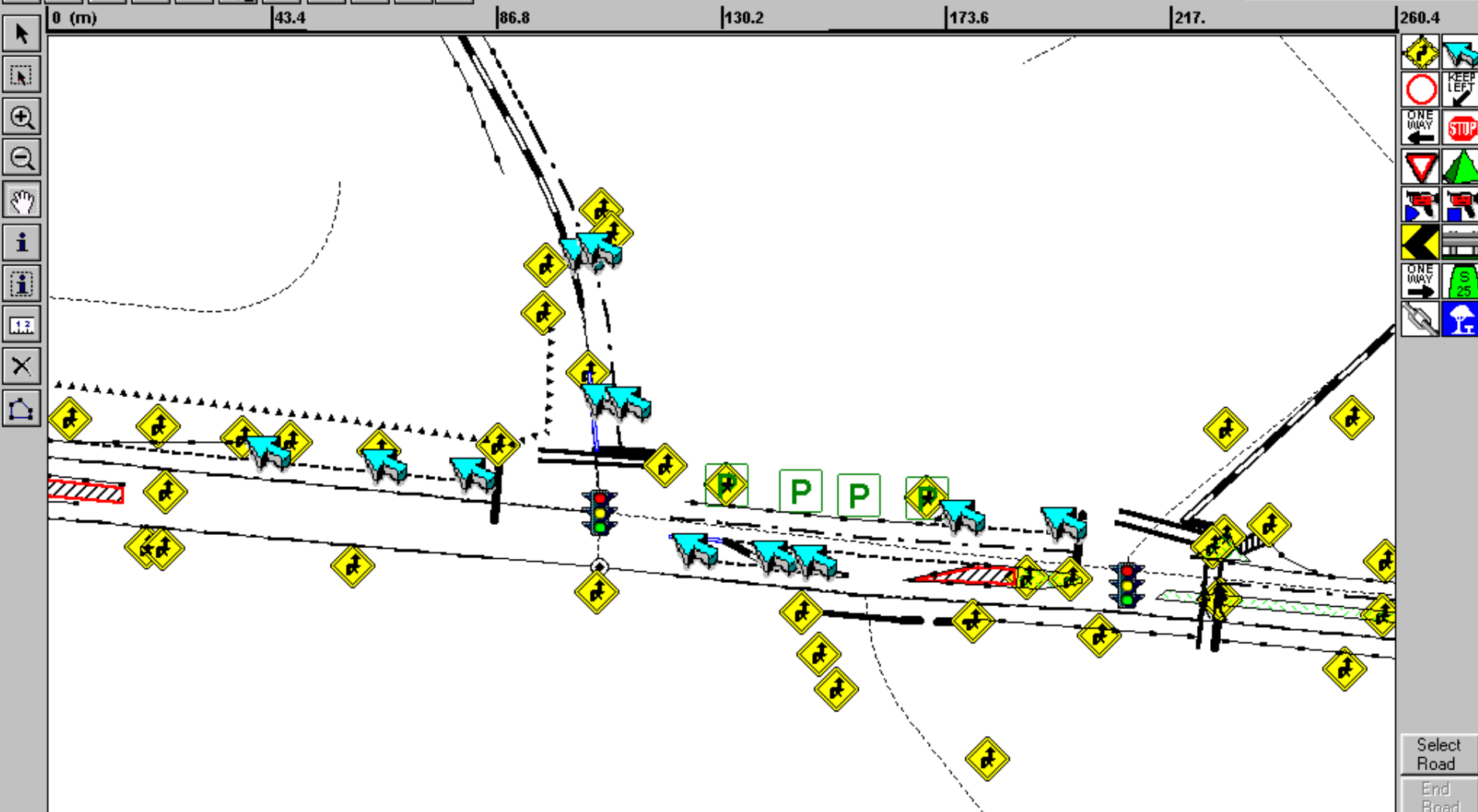|	reported	estim.
Killed	993	1,085
Hospitalized	11,029	18,510
First aid treatment	13,917	92,000
-treated by family doctor		80,000
-treated on accident spot		14,000
-self treated or no treatment		330,000
Slighty injured, total	17,864	24,000
Only damage accidents	280,441	850,000

Reporting rate 2001

Rijkswaterstaat
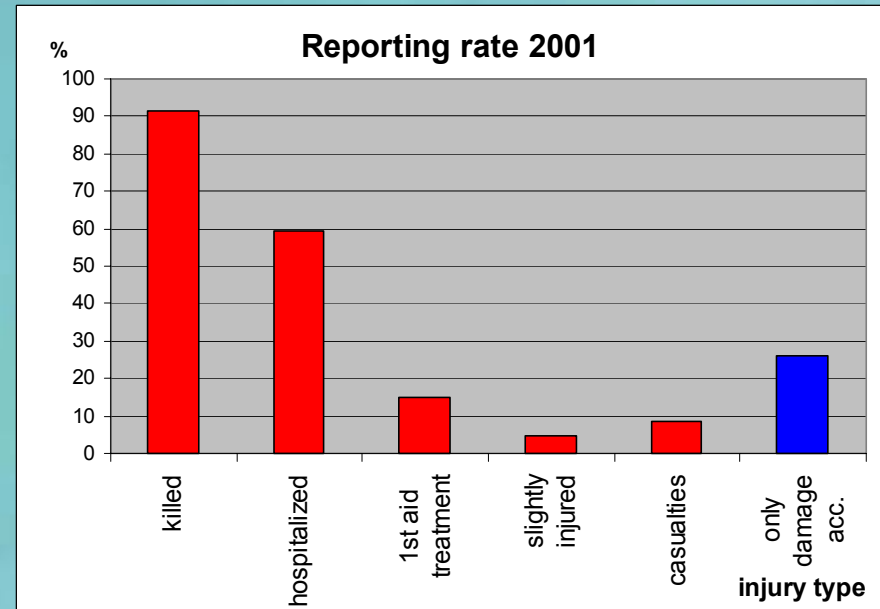
TAIMS: Traffic Asset Inventory Management System

- ✓ Longitudinal linemarking
- ✓ Raised pavement markers
- ✓ Transverse other markings
- ✓ Signs
  - Minor & Major
- ✓ Safety Fences
- ✓ Guideposts
- ✓ Traffic signals (locations)

NWB concept: data-integrator

Waterways Information system

Ship accidents

Regions	Waterways network	Couplings (Transition points, Railroad crossings)
	Railroads network	
	Roads network	

Traffic accidents

Traffic volumes

Traffic risks

Congestion

Road characteristics
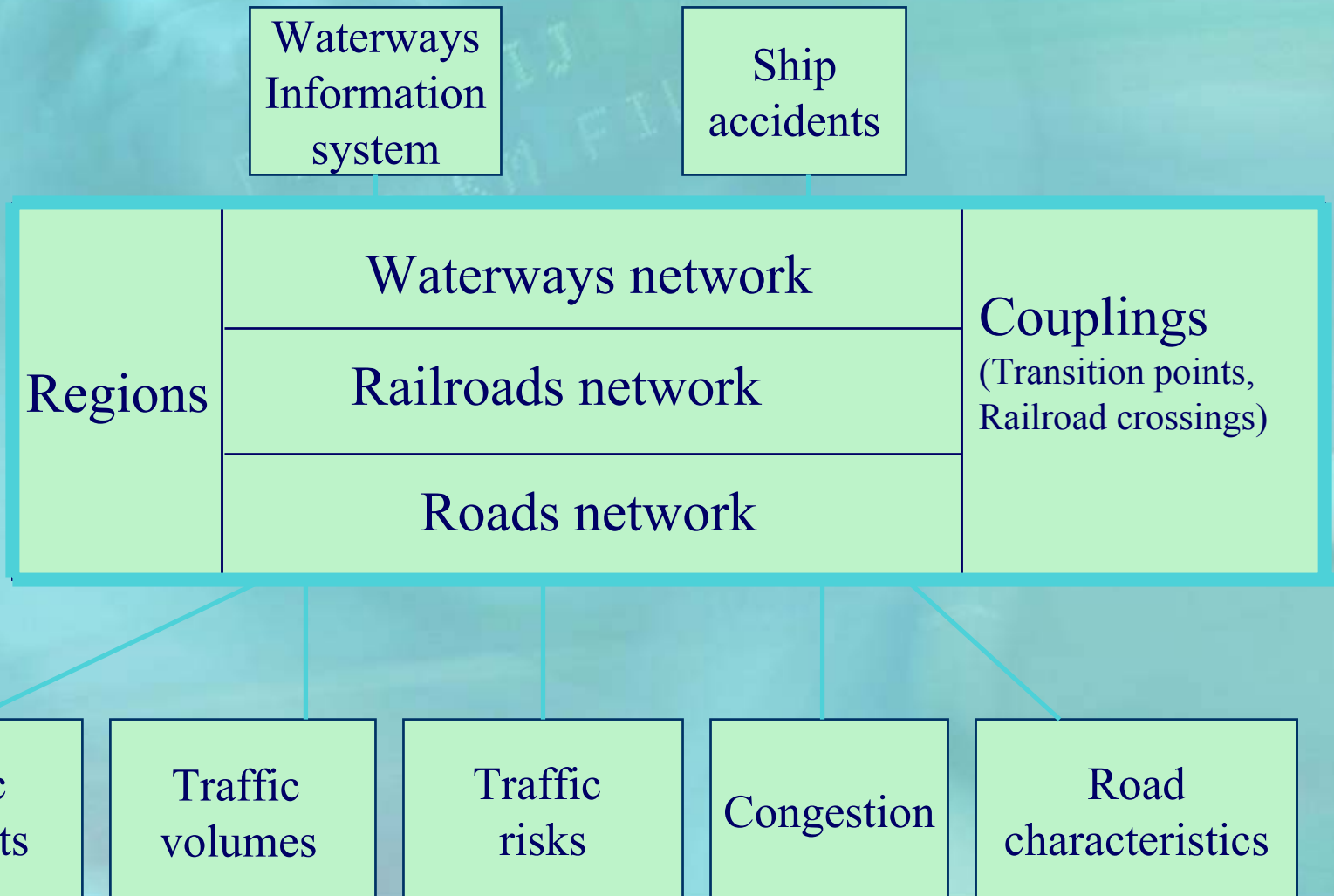
NWB: the information integrator

Map Layers

- WATER
- Gemeente
- Industrie
- Kern
- Bos
- wegvakken
- OV-routes
- Soc.- econ. data
- Routes hoofdwegennet
- Intensiteiten
- ▲ Telpunten
- maximum snelheden
- wegcat naar beleving
- Goederenvervoer
- individueelrisico spoor

Toedeling op NWB

30000   15000   7500
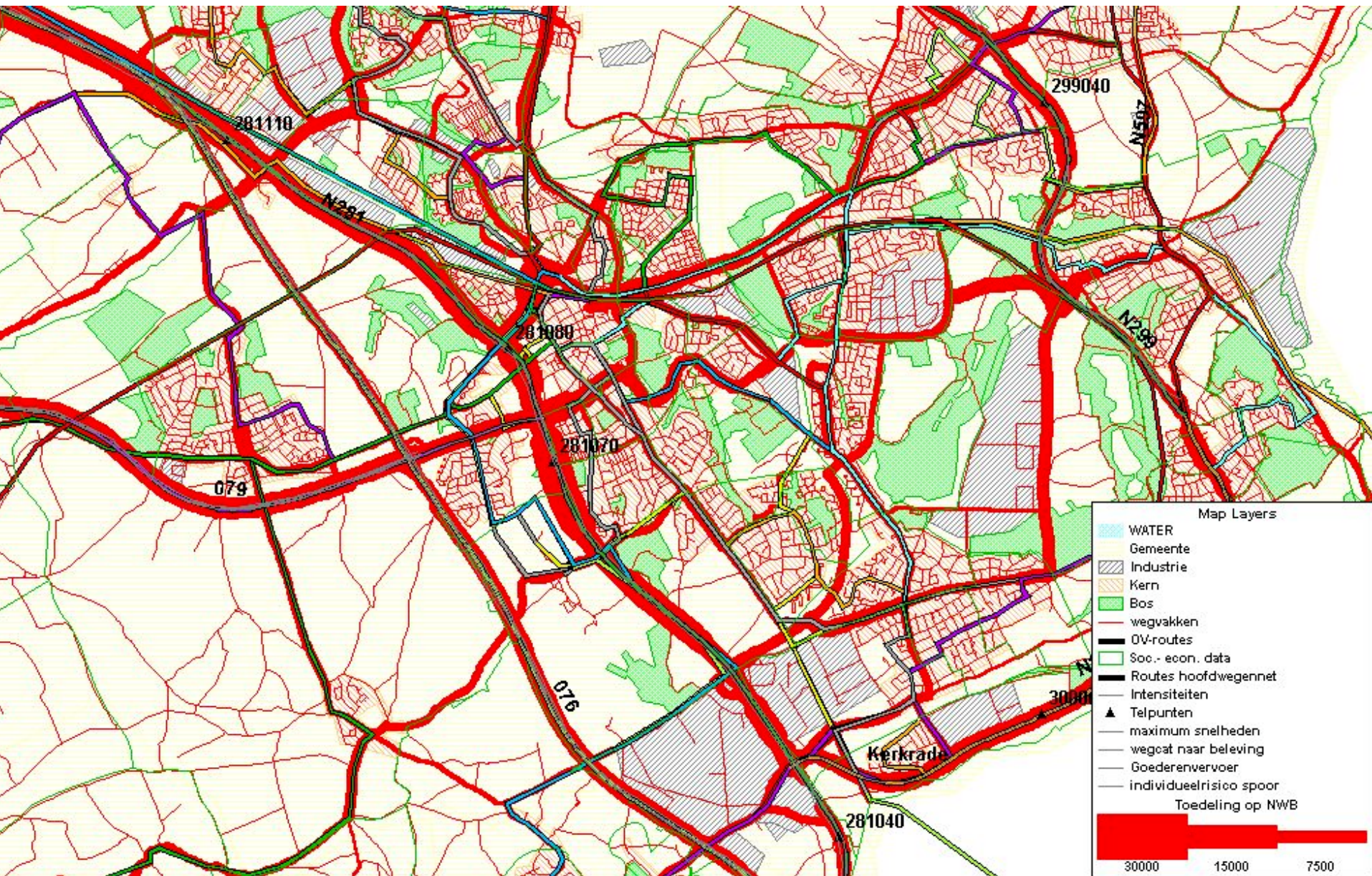
New Ways to Use Technology

◆ GIS to Link /Analyze Disparate Data Files

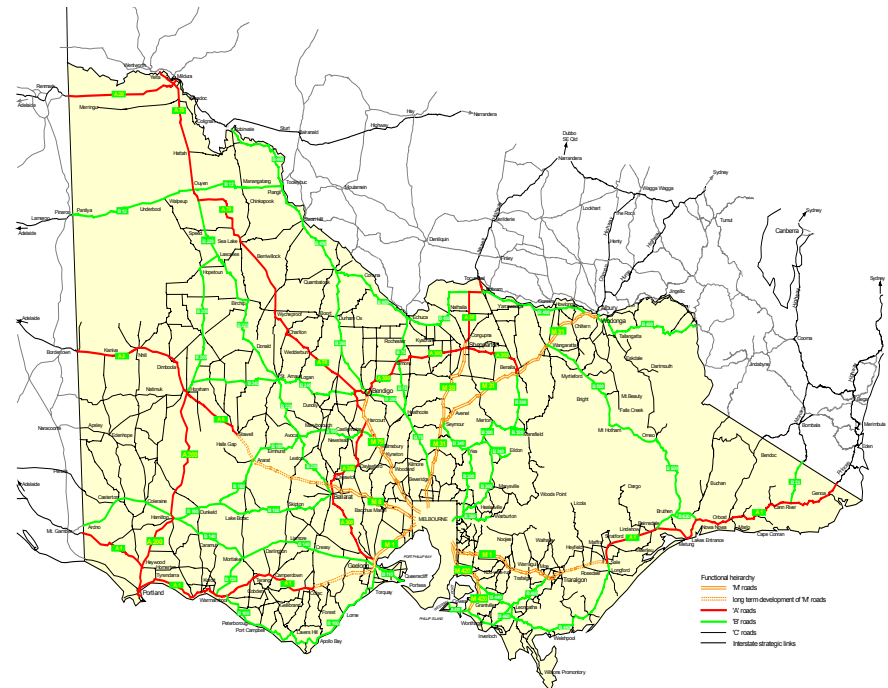◆ Digital Survey Photos to Locate Crashes

◆ Private LOS Maintenance Contrac for Equipment

Quality in Data Entry and Analysis

Saving Lives

Recommendations and Implementation

Identified Strategies

The team identified 26 different strategies

◆ **Too many to tackle**

◆ **The team grouped and prioritized the strategies and selected 9 strategies to develop further**

◆ **Identified the type of strategy**

Institutional	Leadership	Marketing
Research	Technology	Model/Best Practice

Traffic Safety Information Systems Summit/Symposium

A common theme from the scan was that safety data and information was used and shared at the Federal, State and Local levels.

One example, in the Netherlands, the Dutch developed formal data-for-data partnerships with local governments.

Traffic Safety Information Systems Summit/Symposium

Conduct a national high-level Traffic Safety Information Systems Summit/Symposium; facilitate state-level summits
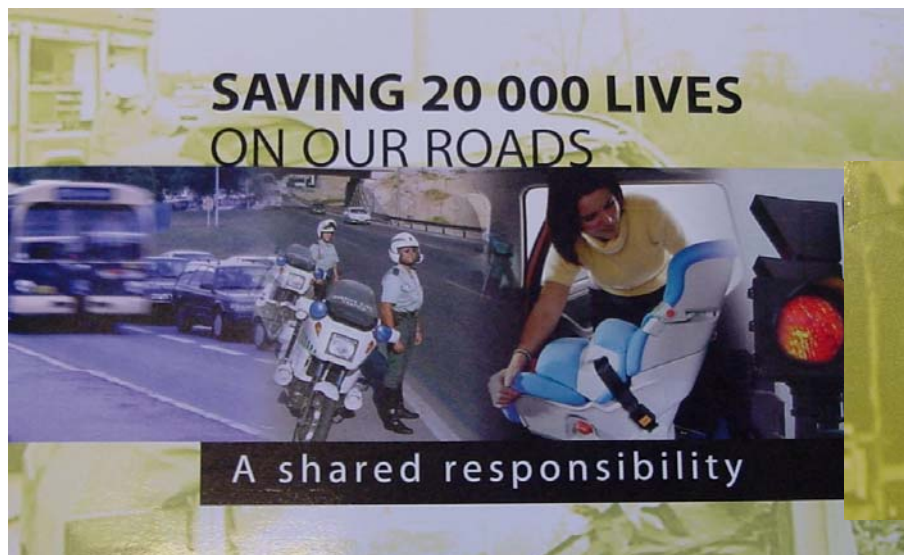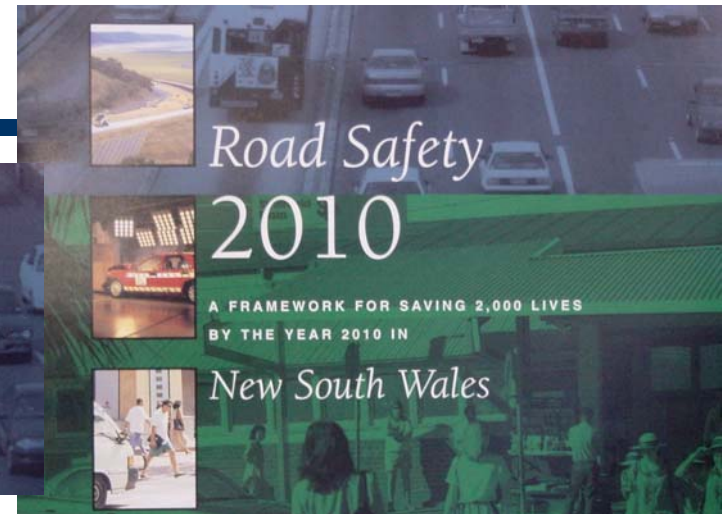
The purpose is to discuss how data and information can be cooperatively used to enhance their programs and to show how and when information can be united or combined.

+ Low Cost   + High Pay Off   ± Moderate Risk

Highway Safety Goals

Conduct a US Scan

- **This strategy was not observed, but was a product of the scan itself.**

- **With the mix of responsibilities, expertise and geographical homes of the team, we found that there are a lot of good strategies and projects going on in the states.**

- **Team members seem to always ask each other "Are you doing something similar in your state?" It appears that in some cases the right people and topics just do not cross path**

+ Low Cost   + High Pay Off   + Low Risk

Develop Marketing a Plan for Highway Safety Information

The Netherlands and Australian States marketed highway safety data like a commodity. Safety information was readily available to government officials, the general public and the news media.

Safety issues were frequently front page news stories, major political issues, and they always were supported with data

$\pm$ **Moderate Cost** $+$ **High Pay Off** $+$ **Low Risk**

Publications & Call Center
Victoria, AUS / The Netherlands
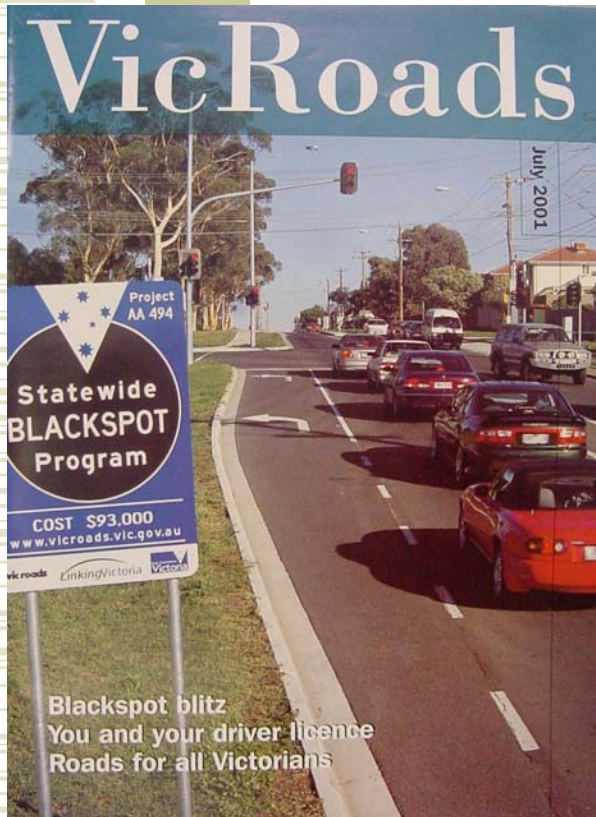
Enhance & Simplify Data Collection by Law Enforcement

In Germany, the Insurance industry designed, built and freely distributed an electronic crash reporting application. Similar tools were demonstrated in Australia and under development in the Netherlands.

There are similar efforts in the U.S. such as TRACS and other commercially available packages.

The Scan Team recommends continued development and implementation of electronic crash reporting and electronic submission throughout the U.S.

– High Cost   + High Pay Off   – High Risk

Expand Use of Existing Technology and Data

In Australia, law enforcement uses existing traffic counters to measure tailgating. This information was used for special enforcement programs.

In the Netherlands, the transportation GIS layers are maintained and managed at the national level, this includes all local streets. This decreases cost by eliminating redundancies.

File   Edit   View   Theme   Tools   Help

Local   WWW

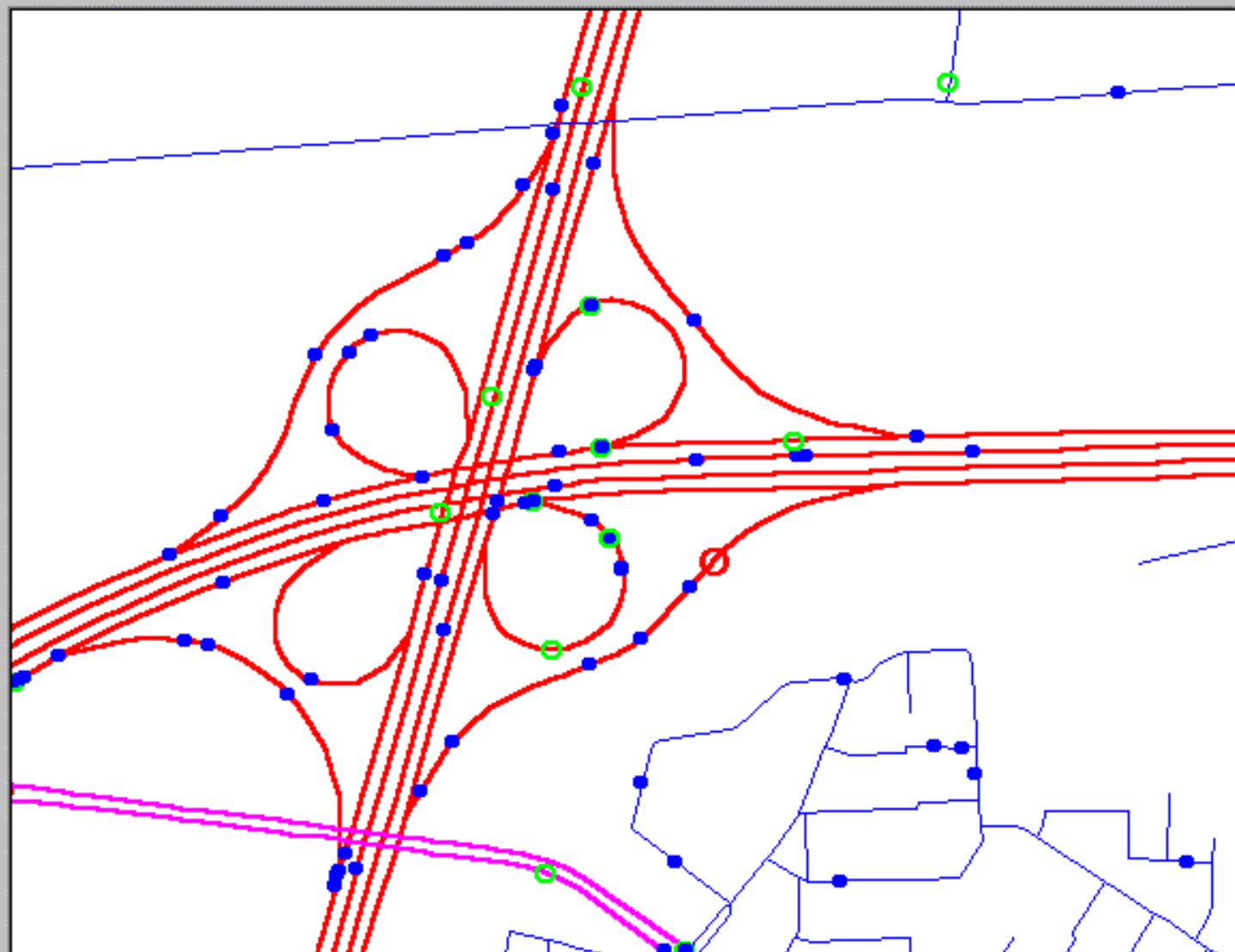☑ 97-4 NAAR AFLOOP (D_a
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▫ 4 - 6,99
▫ 7 - 15,99

☐ HECTOMETRERING

☑ GEMEENTELIJKE WEGE

Map copied to clipboard (BMP)

Active Theme: 97-4 NAAR AFLOOP

Expand Use of Existing Technology and Data

Scan team recommends making a concerted effort to document and make available the wide variety of data that are collected and managed by the various stakeholders.

The Traffic Records Coordinating Committees should lead this effort and should use the Internet to share information about what data are collected.

The wider use of the data make it more valuable. Different agencies could share in the cost of collecting and managing common data needs.

+ Low Cost   + High Pay Off   + Low Risk

Develop Implementation Strategy for the Application of Safety Analysis Tools

The US has safety tools under development such as Safety Analyst, HSM and others. These tools need to have an implementation strategies developed prior to "springing" them on the users.

While this was not directly observed on the scan, there were examples presented in Australia with the asset management tools, and 3-tiered Benefit/Cost analysis process.

$\pm$ **Moderate Cost** $+$ **High Pay Off** $+$ **Low Risk**
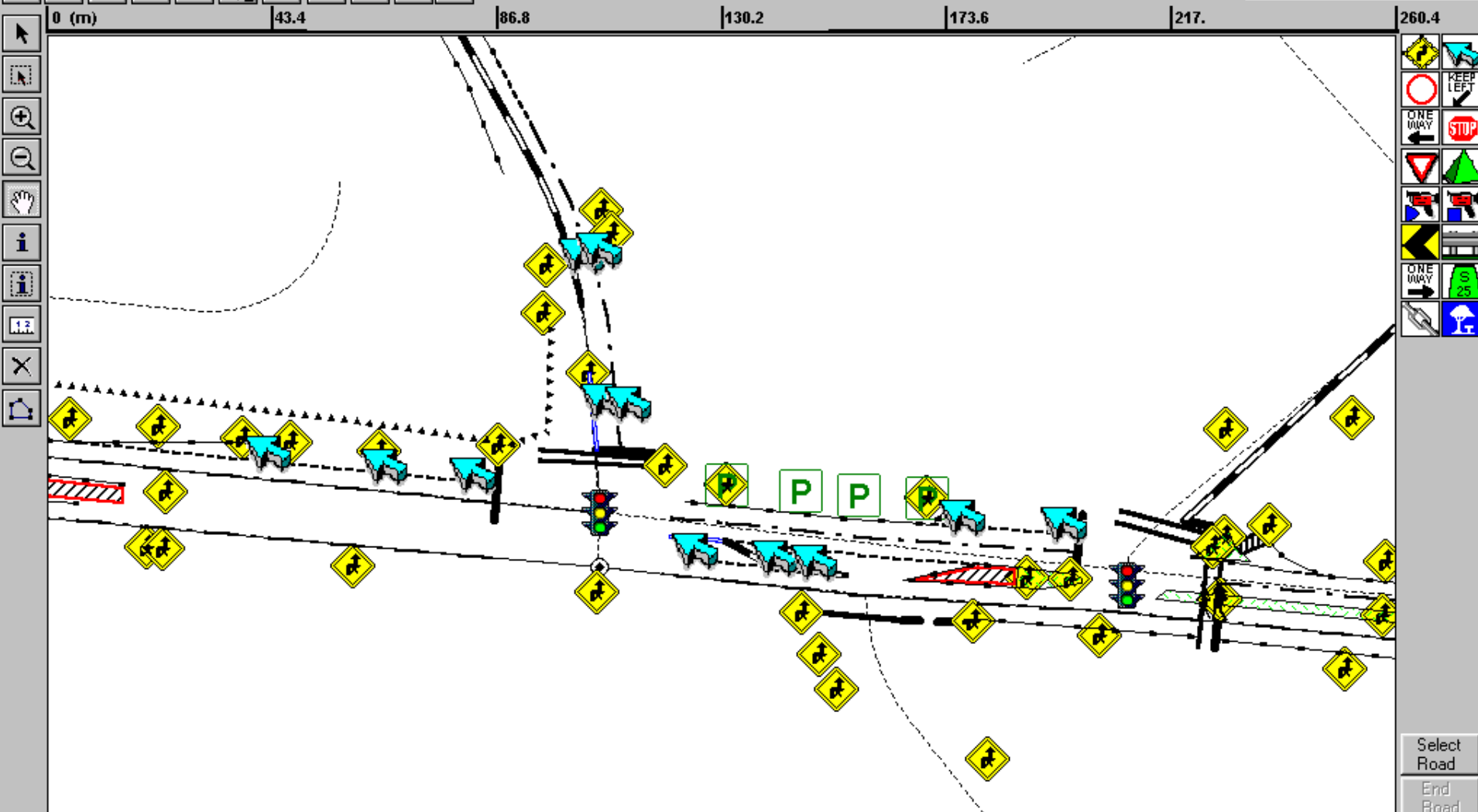
Establish Road Safety Structure with Stakeholders Buy-In & Input

A key finding of the TSIS Scan Team is that the success of highway safety programs within a country or state is optimized when all key stakeholder organizations work together (Federal, State, local levels and others). This was observed in the Netherlands, New South Wales, and Victoria.

There were common goals for all stakeholders in these counties and states. These goals were supported with support from their respective Ministries.

± **Moderate Cost** + **High Pay Off** + **Low Risk**

Safety as a Core Business Function

Victoria's Road Safety Structure

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- TRANSPORT ACCIDENT COMMISSION
- VICROADS
- VICTORIA POLICE
- Secretariat by VicRoads

Seek/Evaluate New Technologies to Improve & Expand Data

In Australia, AARB has developed various tools and technology to simplify collection and improve the data quality. While some of these tools have counterparts in the US, they need to be evaluated to determine if the quality and reliability of the data meets desired standards.

Examples are the *Gipsi-Trac* system for geometry and mapping, and the Fatigue Management System for driver fatigue intervention.

− **High Cost**   + **High Pay Off**   − **High Risk**

Conduct Comprehensive Review of Safety-Related Data Elements

In every country visited, the crash report form had far fewer data elements than the typical report in the US. The Netherlands crash report form contain 43 elements. The VicRoads position was to limit the amount of data collected to those that are needed. This is similar to most DOTs in the US.

This strategy is somewhat controversial because it may eliminate some data elements currently collected.

Conduct Comprehensive Review of Safety-Related Data Elements

This strategy purpose if to critically review the data elements from a benefit/cost perspective. If the benefit of the data element does not exceed the cost to collect and manage the data, then decisions need to be made to either drop the element, look for alternative sources of data, or conduct research to reduce the cost of collection.

− **High Cost**   + **High Pay Off**   − **High Risk**

Strategies that did not make the cut

- Consider the feasibility of estimating under-reporting of crashes and using data

- Develop a safety marketing campaign for a state as a prototype.

- Develop differing levels for MMUCC, e.g., more data for fatal crashes than for PDOs.

- Develop integration of databases tool/s

- Develop internal organizational focus & structure on safety; leadership, core business, measures

- Develop Management supportive structure for reporting and dissemination of data, (e.g., safety strategy staff)

- Develop prototype outstanding internal/external user service support system (e.g., to locals, public, etc)

- Develop safety performance management system

Strategies that did not make the cut

- Development of base-line inventory of existing state & local capabilities for safety info systems (e.g., self-assessment tool, HSIS)
- Encourage states to fund and make use of university research groups knowledgeable about safety issues
- Establish executive level Traffic Records Coordinating Committee in all states
- Expand 23 USC Sec 409 crash data protection to encourage use of proactive safety programs
- Monitor safety performance of NHS; use incentive grants
- Provide data that is displayed for all to see and access, e.g., daily fatal road toll (users vs. public)
- Set up training program of use/collection of data for all involved.
- Use surveys to collect safety information